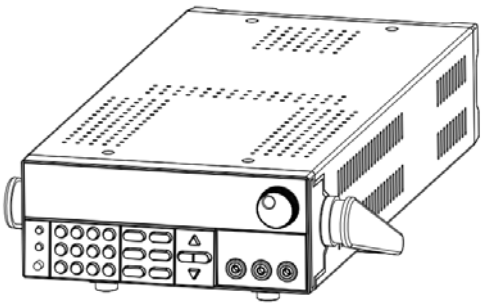
USER'S MANUAL

Programmable HV Power Supply
Model IT6700 Series
IT6723/IT6724/IT6723C /IT6724C/IT6723B/IT6724B/IT6726B /IT6723H/IT6724H/IT6726H /IT6723G/IT6724G/IT6726G/IT6726V



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Ver1.1/OCT, 2012/ IT6700

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IT6700 Series Programmable HV Power Supplies

Security

Please do not install replacement parts in the instrument, or perform any unauthorized modification. Please send the instrument to our company's maintenance department for maintenance, to ensure its security features.
Please refer to the manual for specific information warning or precautions to avoid personal injury or equipment damage.
There is no part that the operator can maintenance. If maintenance service is required, please contact a trained service personnel.

Security regulation

To prevent electric shock, non-authorized personnel is strictly not allowed to open the machine.
This equipment is strictly prohibited for use in life support systems or any other device with security requirements.
We cannot accept responsibility for any direct or indirect financial damage or loss of profit that might occur when using the electronic load.

Safety symbols

Warning

It reminds the user, note some operating procedures, practices, conditions and other matters, that may lead to human casualties.

Notes:

It reminds the user of some operating procedures, practices, conditions and other matters that may result in instrument damage or data lose for ever.

Connect it to safety earth ground using the wire recommended in the user manual.

High voltage danger

The symbol on an instrument indicates that the user should refer to the operating instructions located in the manual.

Certification and Quality Assurance

IT6700 series programmable DC power supply fully meet all of the technical specification in the manual.

Warranty

Our Company provide one year warranty for the materials and manufacturing of the product since the date of shipment.

Warranty Service

For the warranty service or repair the product, the product must be returned to the designated maintenance units. Return the product to us for warranty service, the customer should pre-pay the one-way Freight to the maintenance department. and our company is responsible for the return shipping cost.
If products are returned from other countries for maintenance service, then the customer should pay all freight, duties and other taxes.

Guarantee limit

The guarantee does not apply to the damage caused by the following conditions:
Improper or inadequate maintenance to the products by customer;
Customers use their own software or interface;
Unauthorized modification or misuse;

- Operate this product not in the specified environment, or at the wrong place configuration and maintenance.
- Damage from Customer self-installation of circuit, or defects due to customers use their products .
- Product model or serial number of the fuselage has been altered, deleted, removed or made illegible;
- Damage caused by accidents including but not limited to lightning, water, fire, abuse or neglect.

Notice

If the content of this manual is subject to change, we will not notice additionally

Introduction

IT6700 series power supplies are high performance single-output programmable DC power supplied with communication interface. This series of programmable DC power supply can output the maximum voltage or current with a fixed power for customers. Take IT6723H (300V/10A/850W) for example, when you select 300V for the output voltage, the output power of IT6723H is 850W , so in this case the maximum output current is 850W/300V = 2.83A. When you select 85V for the output voltage, the maximum output current 850W/85V = 10A, but when the output voltage is down to 10V, due to IT6723H maximum current is 10A, so in this case the maximum output current is 10A. IT6700 series power comes with a standard communication interface RS232/USB/GPIB, both desktop and system-based features, can be designed and tested according to your needs and provide multi-purpose solutions.

Convenient bench-top features:

- High visibility vacuum fluorescent display (VFD)
- Output is switch control
- High accuracy and high resolution
- Intelligent fan control, energy conservation, noise reduction
- Standard communication interface RS232/USB/GPIB
- Output voltage and current values accordance with procedure
- Can use the knob to adjust the voltage and current
- Can adjust the knob stepping using the cursor

Model	Voltage	Current	Power
IT6723	80V	40A	850W
IT6724	80V	40A	1500W
IT6723B	150V	20A	850W
IT6724B	150V	20A	1500W
IT6723H	300V	10A	850W
IT6724H	300V	10A	1500W
IT6726H	300V	20A	3000W
IT6723G	600V	5A	850W
IT6724G	600V	5A	1500W
IT6726G	600V	10A	3000W
IT6726V	1200V	5A	3000W
IT6723C	32V	110A	850W
IT6724C	32V	110A	1500W
IT6726B	160V	40A	3000W

Optional Accessories: IT-E151 rack mount kit.（IT6726 not available）

Chapter1 Inspection and Installation

Power supply is a high level safety equipment, there is a protected ground terminal. Before Installation or operation, please read the safety signs and instructions in this manual

1.1 Inspection

After received the power supply, follow these steps to check it:

1. Check for damage in the equipment during transport

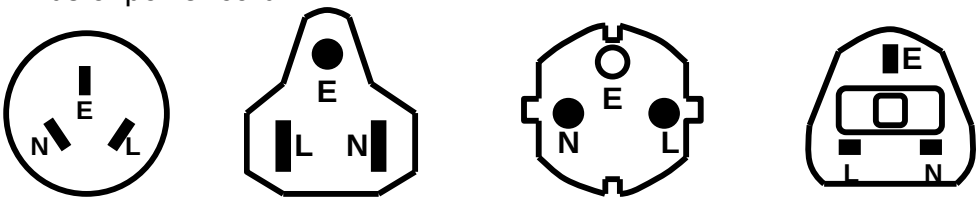
If it is the frame, panel damaged, or abnormal working, etc. Please contact immediately with our authorized dealer or service department. Do not return the instrument before positive response has not been got.

2. Check the attachment

Make sure you receive the power and the following components at the same time, if any missing, please contact your nearest dealer.

□ a power cord (in accordance with the standard voltage used in the region)
□ an operating manual.
□ a factory calibration report

Kinds of power cord



China IT-E171 | USA ,Canada IT-E172 | Europe IT-E173 | UK IT-E174

3. The power input requirements

Working voltage for IT6723/IT6723B/IT6723C/IT6723H/IT6723G is 110V and 220V;Working voltageforIT6724/IT6724B/IT6724C/IT6724H/IT6724G/IT6726H/IT6726G/IT6726V/IT6726B is 220V, so please pay attention to the working input voltage. There is a power cord which matches with your local power in the attachment. If that does not match, please do not hesitate to contact with our authorized dealer or service department.

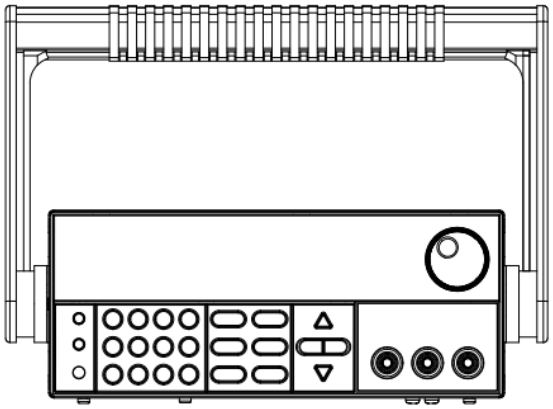
AC input levels : (can choose via the switch on the bottom or power supply)
Option Opt.01:220VAC ± 10%, 47 to 63 Hz
Option Opt.02:110VAC ± 10%, 47 to 63 Hz

1.2 To Rack Mount the Instrument

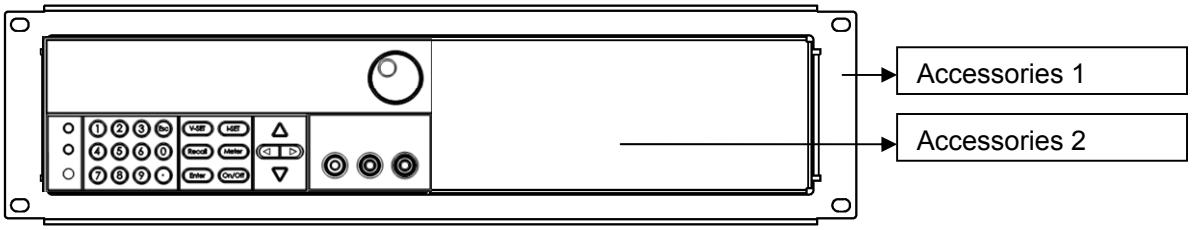
You can mount IT6700 power supply in a standard 19-inch rack cabinet using the IT-E151 (except for IT6726H/IT6726G/IT6726V/IT6726B) rack mount kit.

Method to remove the handle:

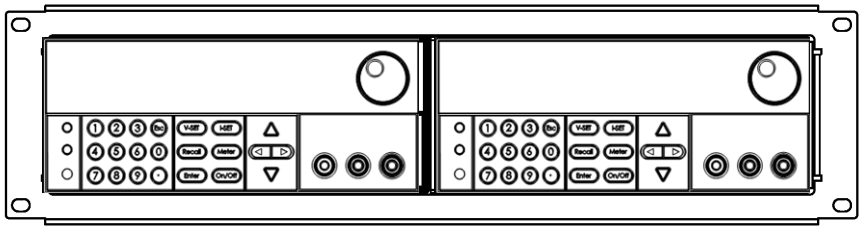
Pull up carrying handle to each outside, rotate it to vertical direction and pull out.



Install method of IT-E151
Remove the carrying handle and the two pale green stickers before rack-mounting the instrument on standard 19'' IT-E151. Mounting specification is as following:
Fix a plastic fitting screwed to the original handle installation position, then fix accessories 1 and mount accessories 2 to the following icon position. The method to fix two power supplies on rack is screw two plastic fittings in original handle installation position, mount accessories 1 after that.



Drawing1.1 To rack mount a single instrument, order rack mount kit IT-E151

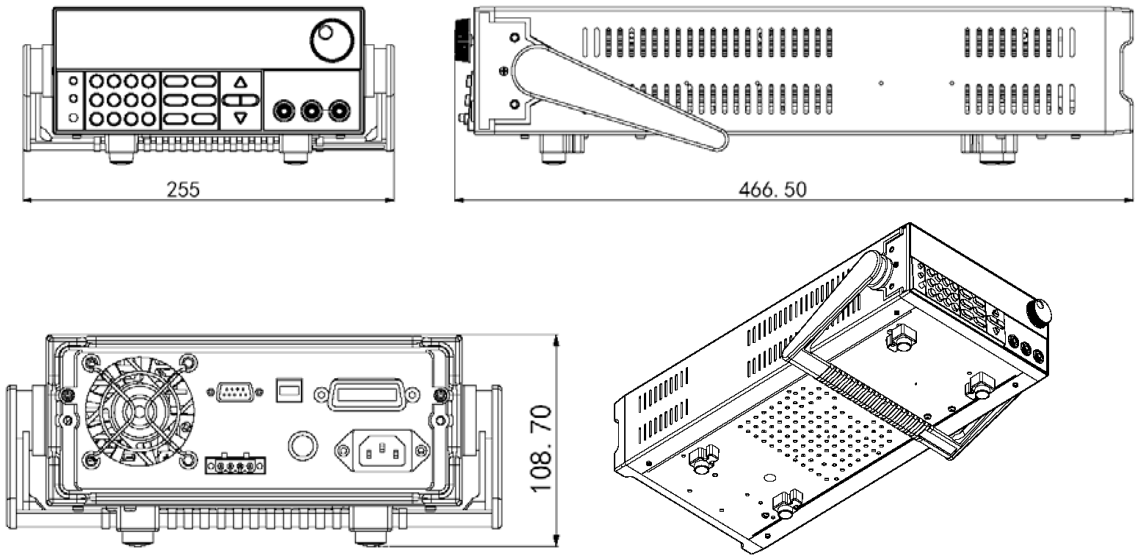


Drawing1.2 To rack mount two instruments side-by-side, order rack mount kit IT-E151, you needn't to use the front cover panel.

1.3 The size of the power supply

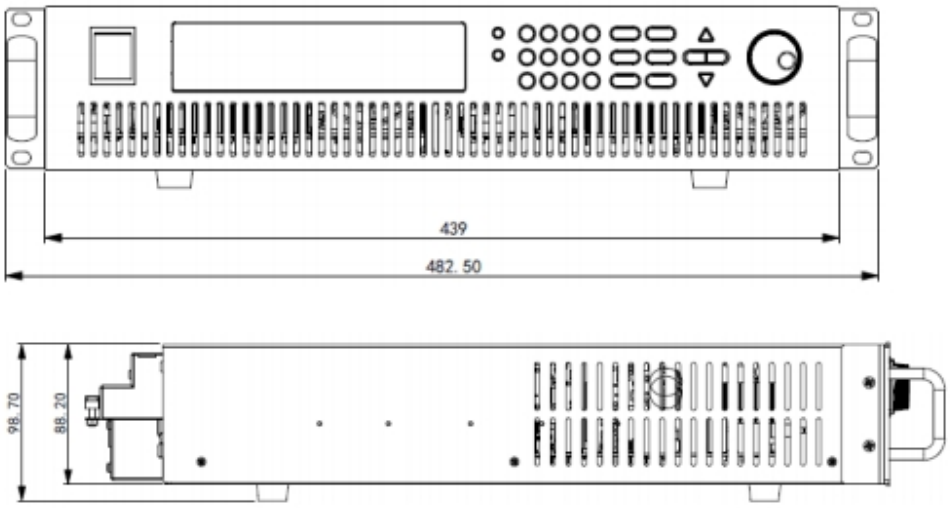
1.SizeofIT6723/IT6724/IT6723B/IT6724B/IT6723C/IT6724C/IT6723H/IT6724H/IT6723G/IT6724G:

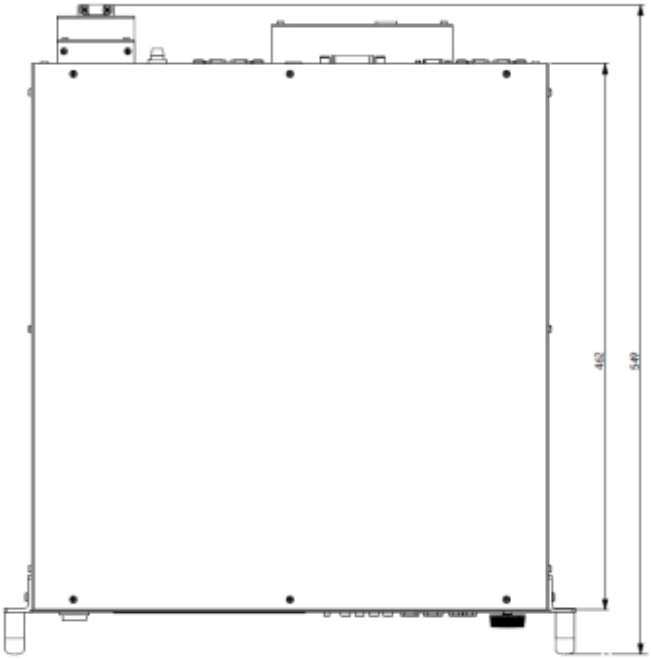
214.5mmW×88.2mmH×445mmD
*refer to the Dimensions below:



Unit：mm

Size of IT6726H/IT6726G/IT6726V/IT6726B: 439mmW×88.2mmH×462mmD

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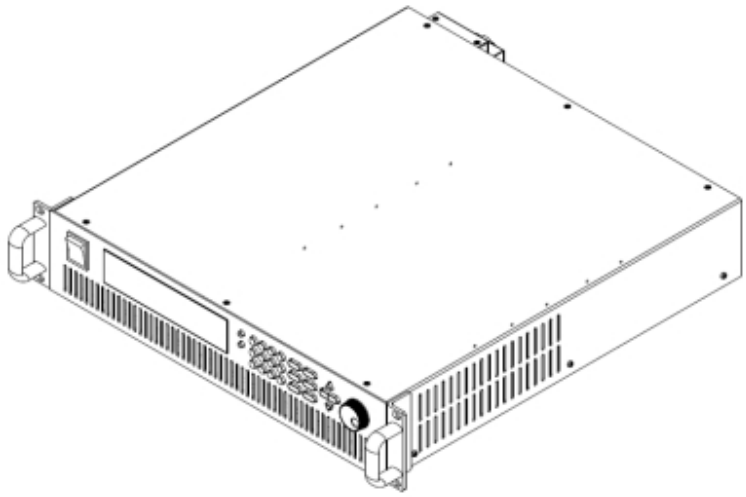
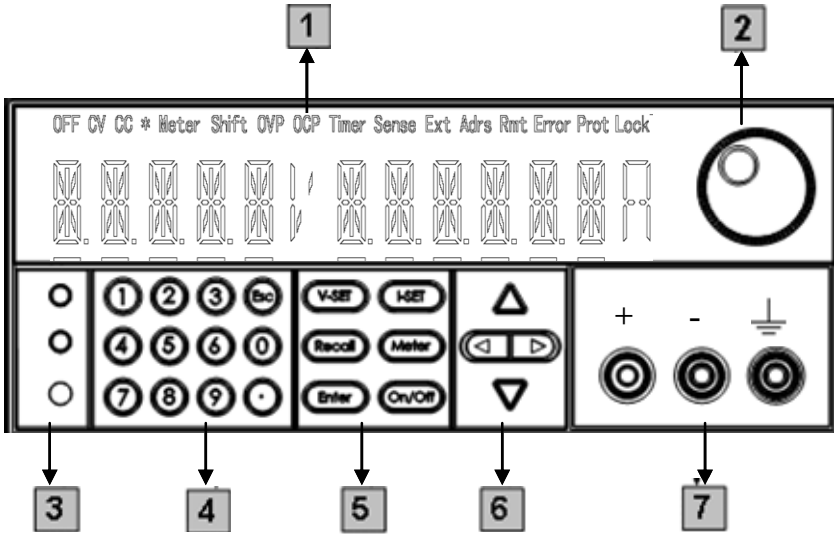


Chapter 2 Quick Start

This chapter introduces the front panel, the rear panel, key functions and VFD display function of the power supply, make sure that you can quickly know the appearance, instruction and the key function before you operate the power supply, Help you make better use of this series of power supply.

2.1 The front and rear panel description

FrontpanelofIT6723/IT6724/IT6723B/IT6724B/IT6723C/IT6724C/IT6723H/IT6724H/IT6723G/IT6724G:



1 VFD display

2 Rotary knob

3 Compound key, the local switch key and power switch

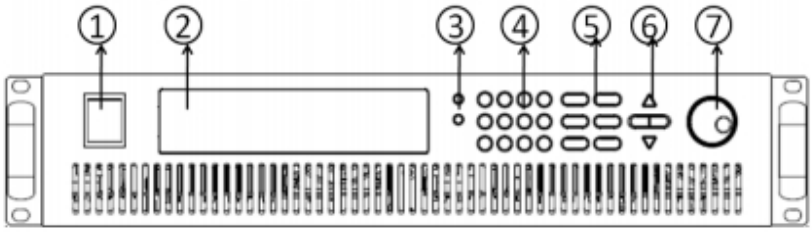
4 Number keys and ESC

5 Function keys

6 UP、DOWN, LEFT and RIGHT key, to move cursor

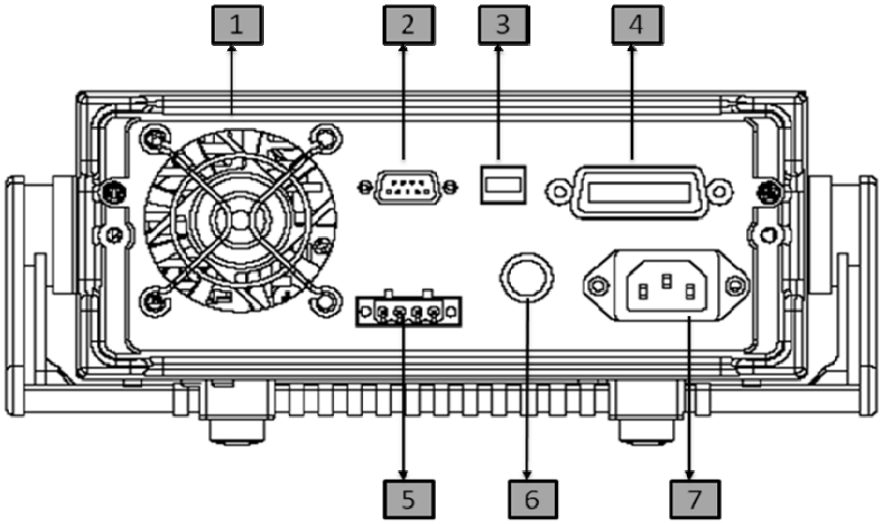
7 Output terminals

Front panel of IT6726H/IT6726G/IT6726V/IT6726B:



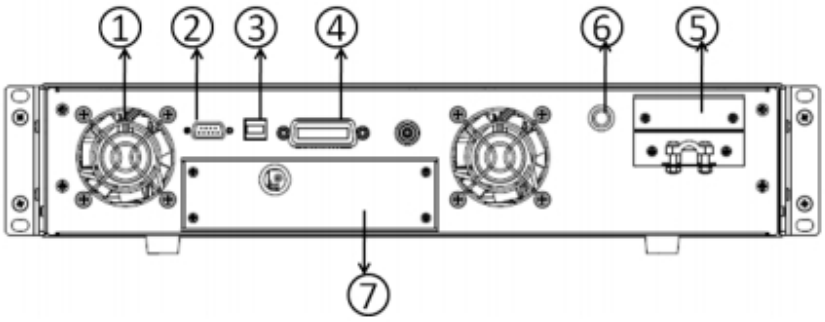
1 Power switch
2 VFD display
3 Compound key, the local switch key and power switch
4 Number keys and ESC
5 Function keys
6 UP、DOWN, LEFT and RIGHT key, to move cursor
7 Rotary knob

Rear panel of IT6723/IT6724/IT6723B/IT6724B/IT6723C/IT6724C/IT6723H/IT6724H/IT6723G/IT6724G:



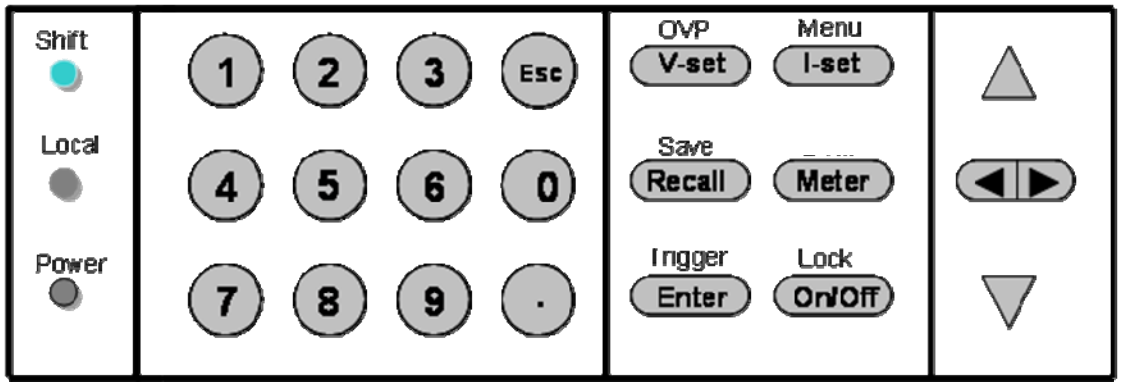
1 Cooling fans
2 RS232 Communication interface
3 USB Communication interface
4 GPIB Communication interface
5 Remote sense terminal and the output terminal
6 Fuse
7 AC power socket

Rear panel of IT6726H/IT6726G/IT6726V/IT6726B:



1 Cooling fans
2 RS232 Communication interface
3 USB Communication interface
4 GPIB Communication interface
5 AC power socket
6 Fuse
7 Output terminal

2.2 Key introduction

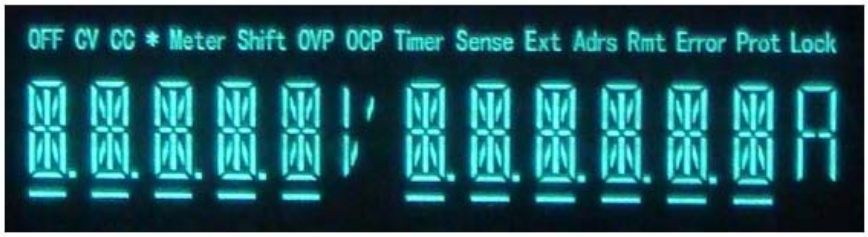


Key description, see the table below:

Keys	Name and the function
Shift	Compound key，co-work with OVP、Menu、Save、Trigger、Lock
Local	Local switch key, switch from remote mode to local operation mode
Power	Power on key
0-9	Numeric keys
V-set OVP	Voltage set key, set the output voltage/over voltage protection point for the power supply
I-set Menu	Current set key, set the output current/menu function key, to set the

	relevant Parameters for the power supply
Recall Save	Callback key to call up a set value of system parameters already stored / storage key, to save system parameter settings
Meter	Meter key, to switch from value set panel and the actual output value
Enter Trigger	Enter key, to confirm the number entered and operation / trigger button, which is used to trigger the List test.
On/Off Lock	Output on (off) keys, control power output state / keypad lock function keys, used to lock the panel buttons
◀ ▶	Left and right movement keys, used to set the value, to adjust the cursor to the specified location
△ ▽	Up and down keys, used to select a item in the menu or increase (decrease) the output voltage or current values
Esc	Cancel /return keys

2.3 VFD Indicator Description



VFD indicator function description as follow:

Char	Function description	Char	Function description
OFF	Output is off	**Timer**	Output on timer function is ON
CV	The power supply is in constant voltage mode	**Sense**	No
CC	The power supply is in constant current mode	**Ext**	No
*	No	**Adrs**	（USB GPIB）light when the address match or (RS232) received order
Meter	Meter mode	**Rmt**	The power supply is in remote mode
Shift	Use compound keys	**Error**	The power supply has error or fault
OVP	OVP function state on	**Prot**	OVP /OTP/OCP Protection
OCP	OCP function state on	**Lock**	Key operation is locked

Chapter 3 power on check

This chapter will introduce the procedure of power on check, including pre-check and output check, to make sure the IT6700 series power supply can power on and work normally on the original state.

3.1 power on Pre-check

Before operate the power supply, please read the following safty guide:

Warning: The power supply is shipped from the factory with a power-line cord that has a plug appropriate for your location. Your power supply is equipped with a 3-wire grounding type power cord; the third conductor being the ground. The power supply is grounded only when the power-line cord is plugged into an appropriate receptacle.

Warning: Use wire with appropriately rated load capacity of all load wires must be able to withstand the maximum short-circuit output current of the power without overheating. If there is more than one load, each load wire must be able to safely carry the power of full rated short-circuit output current.

Warning: In order to reduce the risk of fire and electric shock, make sure that the mains supply voltage fluctuations should not exceed 10% of the operating voltage range.

Note: In some cases, misconfiguration mains voltage for the instrument may cause the mains fuse disconnect.

Note: If use the power supply to charge the battery, be sure to pay attention to the battery's positive and negative polarity, otherwise it will burn out the power!

Power on pre-check includes two parts: power on the supply and system self check.

3.1.1 Power on the supply

Use the following steps to help solve problems you might encounter when turning on the instrument.

1) Verify that there is AC power to the power supply.

First, verify that the power cord is firmly plugged into the power receptacle on the rear panel of the power supply. You should also make sure that the power source you plugged the power supply into is energized. Then, verify that the power supply is turned on.

2) Verify the power-line voltage setting.

The line voltage is set to the proper value for your country (220VAC) when the power supply is shipped from the factory. Change the voltage setting if it's not correct.

3) Verify that the correct power-line fuse is installed.

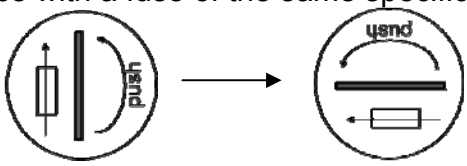
If the fuse was damaged, please see the table below to replace the fuse for your power supply.

Model	Fuse Specifications（220VAC）	Fuse Specifications（220VAC）
IT6723/IT6723B/IT6723C/IT6723H/IT6723G	T15AT 250V	T15AT 250V
IT6724/IT6724B/IT6724C/IT6724H/IT6724G	T15AT 250V	Not available
IT6726H/IT6726G/IT6726V/IT6726B	T20AT 250V	Not available

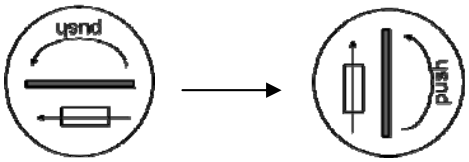
4) How to exchange the fuse

Open the fuse box:

Use a screwdriver to push and turn the fuse box on the rear panel of the power supply, refer to the below picture. After the fuse box is opened, you can see the fuse in it. Please replace with a fuse of the same specification.



When install, use a screwdriver to push and turn the fuse box. Refer to the picture below.



3.1.2 System self-check

After power on normally, the supply will enter self check test first.

If the power supply is normal, then VFD will display the output voltage and current status as below:

About 1 second after power on，If the EEPROM was damaged or the latest operation data in EEPROM was lost, the VFD will display as below:

If the last power status in EEPROM is lost, then VFD will display information (about 1 S) as below:

If the calibration data in EEPROM is lost, then VFD will display (about 1S) as below:

CAL LOST

If the factory calibration data in EEPROM is lost, and then the VFD will display(about 1 S) as below:

FACT LOST

3.2 Output Checkout

The following procedures check to ensure that the power supply develops its rated outputs and properly responds to operation from the front panel.

■ 3.2.1 Voltage Output Checkout

The following steps verify basic voltage functions without load.

1) Turn on the power supply.
2) Set the current value(≥0.01A).
3) Enable the outputs
   Press On/Off key(On/Off key will be lit) to let the **CV** annunciator turn on to light.
4) turn on Meter mode
   press the METER key to light the button, the Meter status Mark lights on the display is turned on.
5) Set the voltage for the power supply
   Set different voltage values, check the voltage value displayed on the VFD is close to the voltage value you set, and to check if the VFD displayed current value is nearly zero.
6) Ensure that the voltage can be adjusted from zero to the full rated value

■ 3.2.2 Current Output checkout

1) Turn on the power supply
2) Press On/Off key to ensure that the output is disabled. At the same time, the OFF status mark is on the VFD.
3) Connect a short across(+) and (-) output terminals with an insulated test lead, use a wire sufficient to handle the maximum current.
4) Adjust the voltage value to 1V.
5) Turn on the power output.
   Press On/Off key to ensure the output is enabled, at the same time there is CC status sign on the VFD.
6) Turn on METER function key.
   Press METER key to light it, and the METER status sign is on the VFD.
7) Adjust the current value
   Set some different current values, check whether the voltage value on VFD is near 0v, and the current on it is close to the value you set.

8) Make sure that the current can be adjusted from 0 to full rated value.
9) Turn off the output of the power supply, and remove the short wire.

Chapter4 technical specification

This chapter will introduce the main technical parameters of IT6700H/IT6700G,such as rated voltage/current/power and so on. Besides, we will introduce the working environment and storage temperature.

4.1 Main technical parameters

Parameters		IT6723C	IT6724C
Rated values (0 °C~40 °C)	voltage	0 ~32V	
	current	0~110A	
	power	850W	1500W
Load regulation ±(％of output+offset)	voltage	≤0.01%+10mV	
	current	≤0.1%+20mA	
Line regulation ±(％of output+offset)	voltage	≤0.01%+10mV	
	current	≤0.1%+20mA	
Setup resolution	voltage	10mV	
	current	10mA	
Readback resolution	voltage	10mV	
	current	10mA	
Setup accuracy （one year）(25°C±5°C) ±(％of output+offset)	voltage	≤0.01%+10mV	
	current	≤0.1%+20mA	
Readback accuracy （one year）(25°C±5°C) ±(％of output+offset)	voltage	≤0.01%+10mV	
	current	≤0.1%+20mA	
Ripple	voltage	≤80mVp-p	
	current	≤150mA rms	
Temp.coefficient (0 °C~40 °C)	voltage	≤0.01%+10mV	
	current	≤0.1%+20mA	
Working temperature	0 °C~40 °C		
Dimension（mm）	214.5mmW×88.2mmH×445mmD		
Weight（net）	6Kg		

Parameters		IT6723	IT6724
Rated values (0 °C~40 °C)	voltage	0~80V	
	current	0~40A	
	power	850W	850W
Load regulation ±(% of output+offset)	voltage	≤0.01%+10mV	
	current	≤0.1%+20mA	
Line regulation ±(% of output+offset)	voltage	≤0.01%+10mV	
	current	≤0.1%+20mA	
Setup resolution	voltage	10mV	
	current	10mA	
Readback resolution	voltage	10mV	
	current	10mA	
Setup accuracy （one year）(25°C±5°C) ±(% of output+offset)	voltage	≤0.01%+10mV	
	current	≤0.1%+20mA	
Readback accuracy （one year）(25°C±5°C) ±(% of output+offset)	voltage	≤0.01%+10mV	
	current	≤0.1%+20mA	
Ripple	voltage	≤80mVp-p	
	current	≤50mArms	
Temp.coefficient (0 °C~40 °C)	voltage	≤0.01%+10mV	
	current	≤0.1%+20mA	
Working temperature	0 °C~40 °C		
Dimension（mm）	214.5mmW×88.2mmH×445mmD		
Weight（net）	6Kg		

Parameters		IT6723B	IT6724B	IT6726B
Rated values (0 °C~40 °C)	voltage	0~80V		160V
	current	0~40A		40A
	power	850W	3000W	3000W
Load regulation ±(％of output+offset)	voltage	≤0.01%+10mV		≤0.01%+60mV
	current	≤0.1%+20mA		≤0.1%+20mA
Line regulation ±(％of output+offset)	voltage	≤0.01%+10mV		≤0.01%+60mV
	current	≤0.1%+20mA		≤0.1%+20mA
Setup resolution	voltage	10mV		100mV
	current	10mA		10mA
Readback resolution	voltage	10mV		100mV
	current	10mA		10mA
Setup accuracy （one year）(25°C±5°C) ±(％of output+offset)	voltage	≤0.01%+10mV		≤0.01%+60mV
	current	≤0.1%+20mA		≤0.1%+20mA
Readback accuracy （one year）(25°C±5°C) ±(％of output+offset)	voltage	≤0.01%+10mV		≤0.01%+60mV
	current	≤0.1%+20mA		≤0.1%+20mA
Ripple	voltage	≤80mVp-p		≤200mVp-p
	current	≤50mArms		≤50mA rms
Temp.coefficient (0 °C~40 °C)	voltage	≤0.01%+10mV		≤0.01%+60mV
	current	≤0.1%+20mA		≤0.1%+20mA
Working temperature	0 °C~40 °C			0~40° C
Dimension（mm）	214.5mmW×88.2mmH×445mmD			439mmW×88.20mmH ×462mmD
Weight（net）	6Kg			13Kg

Parameters		IT6723H	IT6724H
Rated values (0 °C~40 °C)	voltage	0 ~300V	
	current	0~10A	
	power	850W	1500W
Load regulation ±(％of output+offset)	voltage	≤0.01%+60mV	
	current	≤0.1%+20mA	
Line regulation ±(％of output+offset)	voltage	≤0.01%+60mV	
	current	≤0.1%+20mA	
Setup resolution	voltage	100mV	
	current	10mA	
Readback resolution	voltage	100mV	
	current	10mA	
Setup accuracy （one year）(25°C±5°C) ±(％of output+offset)	voltage	≤0.01%+60mV	
	current	≤0.1%+20mA	
Readback accuracy （one year）(25°C±5°C) ±(％of output+offset)	voltage	≤0.01%+60mV	
	current	≤0.1%+20mA	
Ripple	voltage	≤150mVp-p	
	current	≤30mA rms	
Temp.coefficient (0 °C~40 °C)	voltage	≤0.01%+60mV	
	current	≤0.1%+20mA	
Working temperature	0 °C~40 °C		
Dimension（mm）	214.5mmW×88.2mmH×445mmD		
Weight（net）	6Kg		

Parameters		IT6723G	IT6724G
Rated values (0 °C~40 °C)	voltage	0~600V	
	current	0~5A	
	power	850W	1500W
Load regulation ±(％of output+offset)	voltage	≤0.01%+100mV	
	current	≤0.1%+10mA	
Line regulation ±(％of output+offset)	voltage	≤0.01%+100mV	
	current	≤0.1%+10mA	
Setup resolution	voltage	100mV	
	current	10mA	
Readback resolution	voltage	100mV	
	current	10mA	
Setup accuracy (one year)(25°C±5°C) ±(％of output+offset)	voltage	≤0.01%+100mV	
	current	≤0.1%+10mA	
Readback accuracy (one year)(25°C±5°C) ±(％of output+offset)	voltage	≤0.01%+100mV	
	current	≤0.1%+10mA	
Ripple	voltage	≤150mVp-p	
	current	≤20mA rms	≤30mA rms
Temp.coefficient 0-40℃	voltage	≤0.01%+100mV	
	current	≤0.1%+10mA	
Working temperature	0-40℃		
Dimension（mm）	214.5mmW×88.2mmH×445mmD		
Weight（net）	6Kg		

Parameters		IT6726H	IT6726G	IT6726V
Rated values (0 °C~40 °C)	voltage	0 ~300V	0 ~600V	0~1200V
	current	0~20A	0~10A	0~5A
	power	3000W	3000W	3000W
Load regulation ±(％of output+offset)	voltage	≤0.01%+60mV	≤0.01%+100mV	≤0.01%+200mV
	current	≤0.1%+20mA	≤0.1%+20mA	⩽0.1%+20mA
Line regulation ±(％of output+offset)	voltage	≤0.01%+60mV	≤0.01%+100mV	⩽0.01%+200mV
	current	≤0.1%+20mA	≤0.1%+20mA	≤0.1%+20mA
Setup resolution	voltage	100mV	100mV	100mV
	current	10mA	10mA	10mA
Readback resolution	voltage	100mV	100mV	100mV
	current	10mA	10mA	10mA
Setup accuracy （one year）(25°C±5°C) ±(％of output+offset)	voltage	≤0.01%+60mV	≤0.01%+100mV	≤0.01%+200mV
	current	≤0.1%+20mA	≤0.1%+10mA	⩽0.1%+10mA
Readback accuracy （one year）(25°C±5°C) ±(％of output+offset)	voltage	≤0.01%+60mV	≤0.01%+150mV	≤0.01%+200mV
	current	≤0.1%+20mA	≤0.1%+10mA	≤0.1%+10mA
Ripple	voltage	≤250mVp-p	≤300mVp-p	⩽600mVp-p
	current	≤30mA rms	≤30mA rms	≤30mA rms
Temp.coefficient 0-40℃	voltage	≤0.01%+60mV	≤0.01%+100mV	≤0.01%+200mV
	current	≤0.1%+20mA	≤0.1%+20mA	≤0.1%+30mA
Working temperature	0-40℃		0-40℃	0-40℃
Dimension（mm）	439mmW×88.20mmH×462mmD 439mmW×88.20mmH×462mmD			
Weight（net）	13Kg		13Kg	

4.2 Supplementary parameters

Memory ： 9×8 groups suggested calibrationfrequency:1time/year

Max input AC power

IT6723/IT6723B/IT6723H/T6723G	1100VA
IT6723C	1150VA
IT6724/IT6724B/IT6724H/IT6724G	1850VA
IT6724C	1900VA
IT6726H/IT6726G/IT6726V/IT6726B	3700VA

Radiating mode :Fans
Operation temperature:0 to 40 °C
Storage temperature:-20 to 70 °C.
Humidity :Max humidity: 80%

Chapter5 Basic operation

This chapter will introduce the basic operation of IT6700 series power supply,including the following subdivisions:

- Local/remote mode
- Voltage setup
- Current setup
- Output on/off operation
- Setup value/actual value switching
- Voltage/current/power adjustment
- Save/recall operation
- Trigger operation
- Menu operation
- OVP protection function
- Key lock function
- Remote sense function

5.1 Local/Remote Mode

Local button can enable you switch mode from remote to local mode.

After you power on the power supply, the power supply's default mode is local mode, all the buttons can be used in this mode. While in remote mode, you can't operate through front panel directly except Meter and Local keys. Local and remote mode can be controlled through PC. In addition, the mode changing will not influence the output parameters.

5.2 Voltage Setup

You can set voltage within the range of rated voltage value. When you press V-set button, the button will be lit. This indicates that you can set voltage. There are three ways to set output voltage through front panel.

The first way: press V-set ,adjust cursor location through ◀▶ button, pressing △ and ▽ will enable you to adjust the setting voltage value.

The second way: press V-set , adjust cursor location through ◀▶ button, adjust rotary knob to change the setting voltage value.

The third way: press V-set button and number key(0 to 9) to set voltage value

5.3 Current Setup

You can set current within the range of rated current value. When you press I-set button, the button will be lit. This indicates that you can set current. There are three ways to set output current through front panel.

The first way: press I-set ,adjust cursor location through ◀▶ button, push △ and ▽ will enable you to adjust the setting current value.

The second way: press I-set ,adjust cursor location through ◀▶ button, adjust rotary knob ◯ to change the setting current value.

The third way: press I-set button and number key(0 to 9) to set current value

5.4 Output On/Off Operation

On/Off button is used to control the output state of power supply. When On/Off button is lit, this indicates the output is in on mode. When output is open, the working state indicator light(CV/CC) will be lit.

Note: make sure you have connected power supply and the test unit well, then press On/Off button. If there is no voltage output, you should first check the voltage and current set.

5.5 Setup value/Actual value switching

You can switch the display between setting value and actual value by pressing Meter button. When this button is lit, screen displays actual output value and the indicator light “Meter” will be lit on the VFD. In other words, when the button is not lit, the front panel displays setting value.

5.6 Voltage/Current/Power adjustment

The output current value is determined by output voltage of power supply and electronic load’s resistance. Only when the actual current value is lower than the setting current value, can power supply work in CV mode and the will CV indicator light be lit.

If output current is higher than the setting value, then power supply will function in CC mode. And the CC indicator light will be lit.

The output voltage and current value are also influenced by the upper limit of output power.

Take IT6723H (300V/10A/850W) for example, suppose you set the voltage to 100V, then the current can just reach 8.5A(limited by the power).

5.7 Save/recall Operation

Customer can save some often-used parameters in nonvolatile memory. You can use the button (Shift)、Recall(Save) button or SCPI order *SAV、*RCL to achieve this function. Saving parameters include:

1. setting voltage 2. setting current 3. OVP value 4. OCP value

Saving operation:

Press (Shift)+ Recall(save) button(Recall button will flash), and then input the group number you want to save through number key board. Press Enter button to confirm.

Recall operating:

Press Recall button(Recall button will lit), and press corresponding group number(number1-9).At last press Enter button to confirm.

Note: the memory capacity is 9*8, which indicate 8 memory groups and 9 memory in each group. The memory group you use at the present should be selected in the Menu(MEM GROUP)., refer to chapter 5.9.

5.8 Trigger operation

The trigger source of IT6700 include manual and BUS, manual means trigger by button of the front panel, and BUS means trigger by command from the PC.

You need to select the trigger source(TRIG) from the menu before using this function.

After you edit a list file, press (Shift)+ Enter （Trigger）to give a trigger signal. During the running process,Enter button will flash all the time.

5.9 Menu operation

5.9.1 Menu description

Press (Shift)+ I-set(Menu) to enter the menu. You will see a optional items on the screen, through direction keys and rotary knob to overturn VFD display, then the screen will display the following functions .Press Enter button will enter corresponding items. Press ESC button will return to previous menu.

MAX VOLT	Set the max voltage output limit		
OCP SET	**OFF**	Disable the OCP function	
	ON	enable the OCP function	
SYST SET	**P-MEM （RESET）**	**Reset**	Power on parameter is restored to factory setting
		Keep	Set the power-on parameter as the last power off state
	P-OUT (OFF)	**OFF**	Set the power-on output state to be Offt
		Keep	Set the power-on output state to be the last power-off output state

	COMM (GPIB)	GPIB	ADDR	Address can be set within 0-30	
		RS232	BAUD	4800	
				9600	
				19200	
				38400	
				57600	
				115.2K	
			NONE 8BIT	NONE 8BIT	
				EVEN 8BIT	
				ODD 8BIT	
			MODE	SIGNAL	
				MUX	Address can be set within 0-30
		USB	Select USBcommunication interface		
	BEEP (ON)	OFF	Disable the key sound		
		ON	Enable the key sound		
	KNOB (ON)	LOCK	Lock the rotary knob function		
		ON	Un-lock the rotary knob function		
	TRIG (MANUAL)	MANU	Local keyboard trigger		
		BUS	Trigger by command		
	MEM (GROUP1)	GRP1-8	Select memory group for Save and recall operation		
	TIMER SET	OFF	Disable the timer function		
		ON	Enable the timer function, time range 0.1-99999S		
	RESET	NO	keep the present settings		
		YES	restore the factory setting		
	EXIT	Quit the menu setting			
LIST SET	LIST STATE	OFF	Set the LIST state as OFF		
		ON	Set the LIST state as ON		
	LIST LOAD	Re-load the LIST file(FILE0-FILE9)			
	LIST EDIT	TIME (SEC)	SEC	Second	
			MIN	Minute	
		VSET	Set the voltage for present step		
		ISET	Set the current for present step		
		SEC	Setup single step delay time (0.1-9999)		
		NEXT (YES)	YES	continue the edit of next step	
			NO	End up the list file edit	
		REPET	1-65535	Set the cycle count of list file	
		SAVE	NO	Un-save the current LIST file	
			FILE0-FILE9	Save the list file to appointed memory	
	EXIT	Exit the system menu			
POWER INFO	MODEL ITXXXX	Unit model			
	VER	the software version			

	SN-1 XXXXXX	the first six number of SN
	SN-2 XXXXXX	the middle six number of SN
	SN-3 XXXXXX	the last six number of SN
	EXIT	Exit the information menu
EXIT MENU	Exit the main menu	

Note： **Pressing ESC button can enable you to quit any function setting.**

5.9.2 Menu functions

Maximum voltage set（MAX VOLT）

The range of setting voltage is from 0V to rated voltage. You can press (Shift)+I-set (Menu) button to enter the menu, then press △、▽ key to select >MAX VOLT item. Press Enter button to confirm. After you set the max voltage value, the output voltage value can only be set within the max voltage. The default max voltage value is the rated value.

Over current protection set(OCP SET)

Over current protection feature allows the user to set an over current protection point, when the current in the circuit is larger than the current protection point, the power supply will enter OCP protection. Over current protection, power output will be off, and accompanied by the chirping of the buzzer, the VFD mark **Prot** will be lit, and the emergence of "OVER CURR" alarm

The operation to set the OCP point:

Press (Shift)+I-set （Menu）button to menu, press △、▽ to overturn to **OCP SET** ，press Enter button，and △、▽ to select **ON**，press Enter to confirm, set OCP point by pressing numeric keys, then press Enter. At last, press Esc to escape.

Power-on parameters set (P-MEM)

This item can set power on parameters. If you select RESET item, then all the parameters will be initialized to the factory setting. Output voltage and current will always be 0V/max rated current; if set to **Keep**, the output value will be the same with last power off state. The default setting is RESET item.

Power On Output State(P-OUT)

This item can set the power on output state. If you select **KEEP** item, that indicates the power on output state is the same with output state before this item is set. If you select **Off** item, unit will automatically in off mode when you power on. Default setting is **Off** item.

Communication (COMM)

Our unit has provided three standard communication interfaces: RS232/USB/GPIB.In this option, you can select the communication interface according to your demands. The range of GPIB address is 0-30. Besides, we have multi-baudrate to be chosen in RS232 mode---4800,9600,19200,38400,57600,115.2K.Data bit is 8,Check digit have three choices: NONE,ODD,EVEN.Before you begin to carry out communication,please make sure the configure in our unit agrees with PC configure.

Key Sound Set(BEEP)

This item can set the key sound state.If in **On** mode, the power supply will issue beeper sound when you press any button.If in **Off** mode,the beeper will not make a sound.The default set is in on mode.

Rotary Knob Set（KNOB ）

This item is used to set rotary knob state.In **On** mode,you can use this rotary knob to set the output value and overturn the menu items.In **Lock** mode,this knob can't be used.The default setting is in **On** mode.

Trigger source（TRIG ）

Before you running a list file, you need a trigger signal.Thus you must set the trigger mode first: keyboard trigger or command trigger. In **MANU** trigger mode,press (Shift)+Enter button can generate a trigger signal. In **BUS** trigger mode,you can only trigger through sending command. The default set is **MANU** option.

Memory Group Set（MEM GROUP）

Power supply can save some often-used parameters in a nonvolatile memory(capacity is 9*8 groups).This function can make the operations more convenient. Customer can save and recall parameters quickly.

GRP1:This indicates saving power supply parameters in 1-9 groups.Press (Shift)+Recall (Save) and the group number(1-9) can save the parameters in corresponding groups.

GRP2:This indicates saving the parameters in 10-18 groups.Press (Shift) + Recall (Save)+saved group number(1-9） can save related parameters.Note that the current number "1" represents parameters are saved in 10th groups.Number "2" represents the parameters are saved in 11th groups.

GRP3-GRP8 by parity of reasoning.

Detailed Save and Recall operation refer to chapter 5.7.

Timer Set（TIMER SET）

This item is used to set the “time on- load” function, time range 0.1-99999S .In **ON** mode,the indicator light “Timer” will be lit on the VFD screen.When output of power supply is opened,timer will begin to work,after reaching the definite time,output will be off automatically.If in **OFF** mode,the timer function will not be enabled.The default set is **OFF**

Reset（RESET）

This item is used to reset all items in the menu.If you select **YES**,then unit will restored to factory setting.If you select **NO**,all settings in the menu will remain unchanged.

List(List Set)

IT6700 series power supply provides 9 list files,each list file includes 150 steps.
Before you edit a list file,please set the trigger mode:manual mode.

Press (Shift)+I-set(Menu)button to enter the menu,then press direction key to select >**SYST SET** option,after that please push Enter button to confirm.At last to press direction key to select >**Trig MANUAL** and push Enter button to confirm.

You can make the output change order by editing every step value of list operation. The parameters you need to edit includes:single-step voltage,single-step current,single-step delay time and whether to go on the next step.Besides,you also need to set the repeat times and save list sequence file.After the editing process,at this time if a trigger signal is received,power supply will begin to work according to the sequence steps you’ve edit. Now we take five steps for an example:

Operation steps:

(1) Press (Shift)+I-set （Menu）button to enter the menu

(2) VFD display >**MAX VOLT**，press ▽ to select >**LIST SET**，press Enter to confirm

(3) VFD display >**LIST STATE**，press ▽ to select >**LIST EDIT**， press Enter to confirm

(4) VFD display >**TIME SEC**，press Enter to confirm，go to the next step,you can also through ▽ button to select **>TIME MIN** time unit，press Enter to confirm.

(5) VFD display >**VSET 0.0**，press number key 0 to 9 or through rotary knob to set voltage，after that press Enter to confirm.

(6) VFD display **ISET 0.00,** press number key 0 to 9 or rotary knob to set the single-step current, press Enter to confirm.

(7) VFD display **SEC 0.100**，press number key 0 to 9 or rotary knob to set single-step delay time，press Enter to confirm(range is 0.1-9999). If you choose MIN for the 4th step, VFD will display **MIN 0.100** for this step, time range 0.1~9999min.

(8) VFD display **NEXT >YES**，press Enter to confirm.

(9) Repeat the steps from 5) to 8) and set the four steps' voltage/current and delay time separately. When screen display **NEXT>YES** in the fourth step edit process,please press ▽ to select **NEXT >NO,**press Enter to confirm.

(10) VFD display **REPET 1**，press number key 0 to 9 or rotary knob to set the repeat times，press Enter to confirm.

(11) VFD display **SAVE >NO**，press Enter to confirm，in this circumstance,the list file is not saved but can run for one time,or you can press ▽ button to select **>SAVE FILE0**,saving the list test file in FILE0~FILE9，press Enter to confirm.You can recall the file in the following utilization.

(12) If you do not save the list test file,VFD will display **LIST EDIT**;if you select to save the test file,VFD will display **SAVE DONE** for three seconds,and then display **LIST EDITL**.

Set List State

(13) Press △ to select >**LIST STATE item**，press Enter to confirm.

(14) VFD display **LIST >OFF,** press ▽ to select **>LIST >ON,** press Enter to confirm.Now Enter button will be lit.This indicates that list operation function has been opened.

(15) VFD display >**LIST STATE**，pressing Esc button can quit the operation.

Run list file

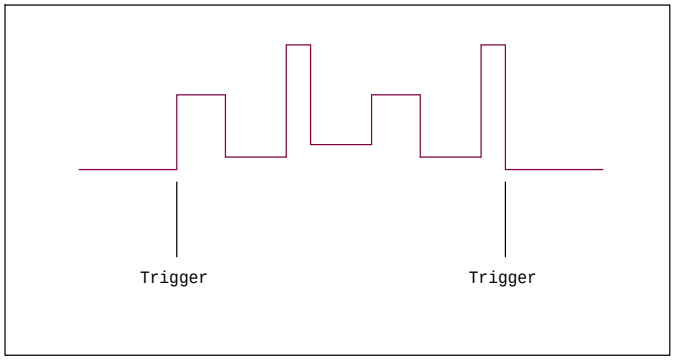
(16) Press On/Off button to open the output，press (Shift)+Enter（Trigger）to give a trigger signal.

Recall list file

(17) If you have edited several list files,you can select **LIST LOAD** item to recall the file you need.And then press Esc to quit this operation.Press On/Off button to open the output.Now you only need to press (Shift)+Enter(Trigger) to give a trigger signal,the list file can be ran.

Quit list file

(18) In LIST mode,voltage set and current set button can't be used,In **LIST STATE** item,choose **LIST>OFF** will enable you to quit list mode.



5.10 OVP function

IT6700 series power supply provide OVP function,press (Shift)+V-set button can enable you to set the over voltage protection level.Over voltage may caused by internal defect or customer's incorrect operation(such as output voltage rising),or a too high external voltage.Once OVP function is triggered,the output will be off immediately and "OVP" indicator light will be lit,the VFD display "OVER VOLT"。

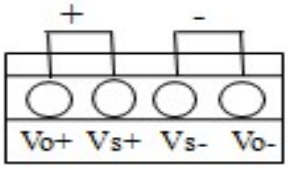
Avoid external voltage that across the output terminals exceeding the 120% of rated voltage or it will damage out power supply!

When power supply in OVP state,please check the external factors first, after you exclude the external factors, press ON/OFF button to open output again.If in communication state originally, you should by sending order OUTP ON order to open output.

5.11 Key Lock function

Press (Shift)+On/Off （Lock）button to set the key lock state.If keyboard has been locked,the indicator light **Lock** will display on the VFD screen.In addition,when key board are lock,all butttons can't be used but ON/OFF、Meter buton、shift button.Press this button once again will relieve key lock function.

5.12 Remote sense function



Vo+，Vo- ： output terminals,the same with front pannel output terminals ;
Vs+，Vs- ： remote sense pins.
Disconnect the wires between "+，-"pins if you want to use remote sense function.Then lead a wire from S+，S- pins and connect to the under test objects.

Remote sense function

Remote sense can adjusted at the output voltage of the device under test, this feature allows to compensate the voltage drop on the wire between the front panel terminals of the power supply and the device under test.

Use local sense:

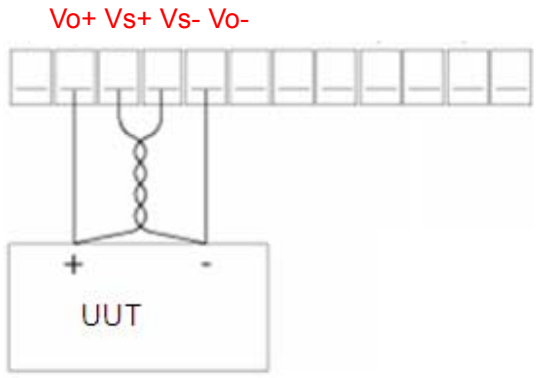
Local sense doesn't compensate the voltage drop on the connection wire, the operation is:

1. Use the short clips on the back panel of the instrument, or install wire between Vo+ and Vs+ 、Vo- and Vs-
2. Connect the the positive and negative terminals of the front panel to the device under test

Use remote sense:

1. Disconnect the wires/short clips between Vo+ and Vs+、 Vo- and Vs-
2. Connect wires from Vs+ 、Vs- to the device usder test
3. Connect wires from Vo+ 、Vo- to the device under test

Note: In order to ensure the stability of the system, using armored twisted pair cable between the remote sense terminal of IT6700 and load.
Please note that the positive and negative polarity when wiring, otherwise it will damage the instrument!



Chapter6 Remote Operation Mode

IT6700 series power supply three standard communication interface: RS232, USB, GPIB, the user can choose any one of them to implement a communication with the computer.

6.1 RS232 interface

There is a DB9 connector at the rear of the power supply, when connect to computer, you need to select a cable with COM port on both side;
To active communication,you need to enable the settings in menu to be the same with the PC communication configuration.

Note：The RS232 settings must match the settings in front panel system information. If any change, please press (Shift)+I-set key to modify the menu: SYST SET\COMM.

RS-232 data format

RS-232 data is a 10-bit words which has a start bit and a stop bit. The start bit and stop bit can't be edited. However, you can select the parity items with (Shift)+I-set key on the front panel.
Parity options are stored in nonvolatile memory

Baud Rate

The front panel (Shift)+I-set button allows the user to select a baud rate which is stored in the non-volatile memory: 4800,9600,19200 38400,57600,115200

RS-232 connection cable

Use a RS232 cable with DB-9 interface, RS-232 serial port can connect with the controller (eg PC). Do not use blank Modem cable. Below Table shows the plug pins.
If your computer is using a RS-232 interface with DB-25 connector, you need an adapter cable with a DB-25 connector at one end and the other side is a DB-9(not blank modem cable)

RS-232 plug pins

Pin number	Description
1	No connection
2	TXD, transfer date
3	RXD, receive data
4	No connection
5	GND, ground
6	No connection
7	CTS, clear transfer
8	RTS, ready to transfer
9	No connection

RS-232 Troubleshooting:

If there is RS-232 connection problem, check the following:
Computer and power supply must configure the same baud rate, parity, data bits and flow control options. Note that the power configuration as a start bit and a stop bit (these values are fixed).
As described before in RS-232 connector, you must use the correct interface cable or adapter. Note that even if the cable has the right plug, the internal wiring may be wrong.
Interface cable must be connected to the correct serial port on the computer (COM1, COM2, etc.).

Communication Settings

Before communication, you should first make the following parameters of power supply and PC matches.
Baud Rate: 9600 (4800,9600,19200,38400,57600,115200). You can enter the system menu from the front panel, and then set the baud rate.
Data bits: 8
Stop Bits: 1
calibration (none, even, odd)
EVEN 8 data bits, have even parity
ODD 8 data bits have odd parity
NONE 8 data bits, no parity
Local Address: (0 ~ 31, the factory default setting is 0)

Parity=None	Start Bit	8 Data Bits	Stop Bit

6.2 USB interface

Use a Cable with two USB port to connect the power and the computer. All power functions can be programmed via USB.
The USB488 interface functions of the power supply described as below:
interface is 488.2 USB488 interface.

Interface Receiver REN_CONTROL, GO_TO_LOCAL, and LOCAL_LOCKOUT request.
Interface receive MsgID = TRIGGER USBTMC order information, and will pass TRIGGER order to the functional layer.
Power USB488 device functions described as follows:
devices can read all of the mandatory SCPI orders.
device is SR1 enabled.
device is RL1 enabled.
device is DT1 enabled.

6.3 GPIB interface

First, Connect the GPIB interface on the power supply and the GPIB card on computer via IEEE488 bus, must be full access and tighten the screws. Then set the address, the address range of the power : 0 to 30, can set by the function key on the front panel, press the (Shift)+I-set key to enter the system menu function, find the GPIB address setting by ▼ button, type the address, Enter key to confirm. GPIB address is stored in nonvolatile memory line.

Note: Forbidden to connect DB9 connector in power supply directly with PC or other RS232 port.

Support process

If you have a problem , follow these steps:

1 Check the documentation that come with the product

2 Visit the ITECH online service Web site is www.itechate.com ,ITECH is avaliable to all ITECH customers. It is the fastest source for up-to-date product information and expert assistance and includes the following features :

Fast access to email AE

Software and driver updates for the product

Call ITECH support line 025-52415098